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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/808,246 | 03/24/2004 | Thomas Hubert Van Steenkiste | DP-308960 | 4203 |

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| EXAMINER |
|---|
| PARKER, FREDERICK JOHN |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1762 | |

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/808,246 | VAN STEENKISTE, THOMAS HUBERT | |
| | Examiner | Art Unit | |
| | Frederick J. Parker | 1762 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-17* is/are allowed.

6)☒ Claim(s) *18-22,25,26,28-35* is/are rejected.

7)☒ Claim(s) *23,24 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

1. Claims 5,22 are objected to because of the following informalities: since to the Examiner's knowledge there is only one type of diamond per se (isometric crystallized, covalently bound carbon ), removal of "a" before diamond is appropriate. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 18-21,28,29,35 are rejected under 35 U.S.C. 102(e) as being anticipated by Heinrich et al WO 03/041868 , 5/22/03(utilizes US 2004/0166247 in lieu of translation since it derives priority therefrom; all citations are from the US publication).

Heinrich teaches a method of cold spraying powders to form coatings [0002] using a supersonic Laval nozzle. As shown in figures 1, 2b &c, powder tube 2 is arranged coaxially within the inner walls of the nozzle opening and downstream of a pressurized gas flow emanating from antechamber 3 and screen 4, there being a space gap between the inner walls of the nozzle and the outer walls of the powder tube 2. The pressurized gas may be heated up to 800C to improve plastic deformation during kinetic impact and increase gas flow rate[0003,0008]. Gas passes around the aforementioned gap and particles are injected into the

gas jet axially and centrically [0007]. Contact of warm gas and the particle stream optimizes acceleration [0009], the particles being ejected against a substrate to form the coating forms by kinetic impact. Acceleration of the particles is cited by the reference up to 2000m/s [0007] which encompasses claim 29. Per claim 35 the nozzle may comprise a tubular portion with one part having a tapered shape (see fig. 1)

The "Background..." section states kinetic spraying utilizes powders at least partially comprising particles 1-50 microns, encompassing the end-members of claims 19-21.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 25-26,28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinrich et al.

Heinrich is cited for the same reasons previously discussed, which are incorporated herein. While size of the space flow gap per claims 25-26 are not cited, such design parameters would have been determined by one of ordinary skill by routine experimentation, given the anticipation of the independent claim by the reference. Per claim 28, the temperatures of the heated main gas overlap as the reference teaches gas temperatures up to 800 C. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the gas temperatures disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see In re Wortheim 191 USPQ 90.

While widths of the coatings applied are not cited per claim 31-34, since the method as claimed in the independent claim is disclosed by Heinrich et al, it would have been reasonable to expect similar or the same coating outcomes. When a reference discloses the limitations of a claim except for a property, and the Examiner cannot determine if the reference inherently possesses that property (in this case, coating widths ), the burden is shifted to Applicant/s, In re Fitzgerald 205 USPQ 594 and MPEP 2112.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Heinrich et al by optimizing obvious nozzle and process parameters within the purview of one skilled in the art to achieve successful coating for any desired powder, end-use application, or coating properties.

8. Claims 22,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinrich et al. in view of Van Steenkiste US 2003/0190414.

Heinrich is cited for the same reasons previously discussed, which are incorporated herein. Specific coating particles are not disclosed. However, Van Steenkiste teaches a similar supersonic kinetic spray method comprising a Laval nozzle, wherein it is disclosed in [0024] that kinetic spraying can utilize any particles, specifically noting metals, alloys, ceramics, polymers, diamonds, and mixtures thereof. It is also taught to use substrates of metals, alloys, semi-conductors, ceramics, polymers, and mixtures thereof. It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the kinetic spray coating method of Heinrich et al by utilizing the particles and substrates disclosed by Van Steenkiste because the latter reference positively recites the specific coating particles and substrates for similar kinetic spraying methods.

9. Claims 23-24,27 are objected to for depending from a rejected base claim. The prior art does not teach nor suggest a flow regulator having a biconical concentrator formed from a second and third cone joined as claimed in claim 23; nor the relation of holes through the base of the flow regulator as claimed in claim 27.

10. Claims 1-17 are allowable because the prior art does not teach nor suggest a flow regulator within a supersonic nozzle as specifically claimed in claim 1, and the process of carrying out kinetic spraying using the flow regulator within the supersonic nozzle as specifically claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Frederick J. Parker
Primary Examiner
Art Unit 1762

fjp